

antennæ in this species. The size of *lurida* in our series of twenty-four specimens varies in length from 4.35 mm. to 5.8 mm. It is impossible to separate the smaller specimens of *lurida* from *obscura* Parsh., by the inadequate and obscure description nor by the characters used in the key to the genus in his second paper. In both of these papers a great deal of emphasis is placed on size, narrow form, and antennal structures that apply equally well to the smaller specimens of *lurida*. Possibly an examination of the types may enable one to separate them.

BOOK REVIEWS.

THE MOSQUITOES OF NORTH AND CENTRAL AMERICA AND THE WEST INDIES. By L. O. Howard, H. G. Dyar and Frederick Knab.

Volume 1, pp. I-VI, 1-520, 1912.

Volume 2, pp. I-X, Plates 1-150, 1912.

Volume 3, pp. I-VI, 1-523, 1915.

Volume 4, pp. 525-1064, 1917.

A notable chapter in that branch of Dipterology known as Culicology has been completed by the appearance of Volume 4 of this magnificent contribution to the knowledge of American mosquitoes—a work which reflects high credit not only upon the authors and the institution which made publication possible, but also upon the recognition entomology has won and which really has made possible the completion of such a comprehensive and exhaustive study. It is a response to the recognition of the vital relation certain species of mosquitoes sustain to the welfare of the human race, and a demonstration of the fact that the knowledge of pathogenic forms is incomplete without a study of associated and allied species.

The older entomologists easily recall the earlier days when only a few supposedly uninteresting and assumedly similar or very similar species of mosquitoes were known to occur in America, and can compare the conditions then and those obtaining now with practically 400 recognized species referable to 25 genera, and presenting undreamed of biological and morphological diversities,—

and this after excluding the Corethrinæ. It is not in mere numbers of species that this work displays its merits. It is most emphatically a compend of our knowledge—taxonomical, synonymical, morphological, biological—of a large and important group presenting many difficult problems to the solution of which the several authors have contributed largely, and at the same time most carefully made due acknowledgment of the part played by their colleagues.

This series of volumes leaves little to be desired along historical, biological and economic lines, and since the first two volumes appeared in 1912, and were duly reviewed, there is no necessity of extended comment in this connection.

The first part of the taxonomic portion (Volume 3) appeared in 1915, and is continued in the just issued Volume 4. Obviously one could hardly be discussed intelligently without the other. The authors have recognized only those genera which could be defined by characters found in both sexes, and consequently submerged some because they were based upon peculiarities exhibited by one sex, giving as a reason therefor that not all specimens submitted for determination are bred, nor are both sexes always represented. This is very frequently the case with other insects. It is doubtless more convenient from certain standpoints, and yet it is admitted by the authors that genera erected upon characters found only in one sex are valid, and the disregard of such genera may not be generally accepted. A striking application of this method is seen in the inclusion of such different forms as *Aedes fuscus* O. S., now considered a synonym of the European *A. cinereus* Meign., and the large series represented by the salt marsh mosquito (*sollicitans*), and a number of our common woodland mosquitoes in the same genus. There are marked differences in these insects not only in the male palpi, but in the genitalia, and the mere fact that there has been reduction in palpal structures in several independent series by no means invalidates the use of such modifications for generic separation. This is simply a tendency in specialization which is closely paralleled in the gall midges where we consistently find the same phenomenon, though in both sexes, in each of several large tribes and within certain limits the palpal reduction indicates the degree of specialization, and in the group

mentioned is usually accompanied by other modifications—not infrequently biological as well as structural.

The stability of modern nomenclature is rather rudely shaken by the footnote, on page 824, to the effect that those who had unlearned *Stegomyia fasciata* must now proceed to dissociate their mental processes from *Aedes calopus* and think in terms of *Aedes argenteus*, a discovery made too late for incorporation throughout a work which has been in progress for approximately ten years, and if later workers insist upon a strict application of the rules of nomenclature, it is probable that there will be another change in the name of the genus to which this world-famous mosquito is referred. The announcement that *Aedes fuscus* O. S. is a synonym of the European *Aedes cinereus* Meign. is also made in a footnote, and like the preceding was received too late for incorporation in the body of the work.

It is not expected that a dissertation of this character would be entirely acceptable to all. It deals with a large group. The classification has been worked out in recent years from several very diverse standpoints. The authors have endeavored to harmonize the evidence presented by adult and immature stages and it is more than probable that no two or three men would arrive at the same conclusion in regard to a number of debatable points. We have in these volumes tabulations for the separation of families, tribes, genera and species in both imago and larval stages and also a remarkably comprehensive and detailed study of the larvæ. A knowledge of these latter, their habits and characteristics, is of great importance in mosquito control work. This series of four volumes constitutes by far the most complete account we have of any similar group and marks distinct progress toward that comprehensiveness and thoroughness investigators so generally recognize as ideal. It is unfortunate that two of the authors who undertook the preparation of the systematic part of this work did not have an opportunity of personally studying the types in European collections.

There doubtless will be some changes in generic groupings and possibly some in tribal definition, though the latter appears to the reviewer as very satisfactory. We have at least a magnificent basis for future work, and he who desires to improve upon the system proposed may well estimate in advance the amount of

labor involved in the attempt to rearrange this vast complex with its varying, and in some instances apparently antagonistic lines of development in the adult and immature stages. The faunal region covered is broader than that which falls to most investigators and moreover there have been exceptional opportunities for special collecting in a number of representative areas.

E. P. FELT.

NOTE OF CORRECTION (HEMIPTERA).

PSYCHE, 1914, Vol. 21, List Hem.-Het. of Maine:

In this article are a number of errors of determination, etc., which are corrected in my New England list recently published in the Occasional Papers of the Boston Society of Natural History.

PSYCHE, 1915, Vol. 22, Synop. Families:

P. 90, line 3 from bottom: "rostrum 3-segmented" should read rostrum 4-segmented.

Ib., Synop. Pentatomidæ:

P. 172, line 20 from bottom: "17" should read 16; line 8 from bottom: "14" should read 15.

P. 173, line 20 from bottom: "16" should read

1. **Peribalus.** Delete the next three lines and substitute:

16. Juga much longer than tylus. 19. **Dendrocoris.**

Juga not much longer than tylus. 17

Ent. News, 1915, Vol. 26, Ext. Anat. A. *rapidus*, etc.:

P. 212, "embolim" should read **embolium**.

PSYCHE, 1917, Vol. 24, Notes on N. Am. Tingidæ:

P. 24, The holotype of *Hesperotingis fuscata* Parsh. is in de la Torre Bueno's collection, not in Barber's.

For other corrections see PSYCHE, 1915, Vol. 22, p. 220.

H. M. PARSILEY.